

Pipeline Group Factual Report

ATTACHMENT 19

IMP Risk Model- Questions & Select Options for Defects

**Carmichael, Mississippi
DCA 08 MP 001**

Defects**Welding records**

	0
Strict welder qualification, complete records, 100% x-ray.	1
Strict welder qualification, complete records, < 100% x-ray.	2
Strict welder qualification, mostly complete records, < 100% x-ray	3
Records incomplete.	4
No records.	5

Pipe type

	0
Seamless.	1
DSAW.	2
Post 1970 ERW.	3
Spiral weld.	4
Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5

Pipe manufacturer

	0
Known, highly reputable.	1
Known, normally good quality.	2
Known, quality sometimes questionable.	3
Known, quality often a problem.	4
Unknown.	5

Pipeline age

	0
5 years or less.	1
6 to 10 years.	2
11 to 20 years.	3
21 to 30 years.	4
>30 years or unknown.	5

Normal operating pressure stress/SMYS

	0
< 20%.	1
> 20% but < 40%.	2
> 40% but < 50%.	3
> 50% but < 60%	4
> 60% but < 72%	5

Un-repaired defects

	0
None.	1
Some and in repair schedule.	2
Some but not serious.	3
Numerous.	4
Unknown.	5

Q's and Select Box Options**Actual Values****Pipe information**

Fully documented by mill certificates.	0
Documented with some mill certificates.	1
Manufacturing spec known but no mill certificates.	2
No specs or mill certificates but manufacturer known.	3
No information.	4
	5

Backfill

Excellent quality with documented construction and dig reports.	0
Good/excellent quality with no rocks.	1
Good quality with small rocks, no large rocks or small boulders.	2
Fair quality with some large rocks.	3
Poor quality or unknown.	4
	5

History of defects related leaks/spills

None in last 10 years.	0
One in last 10 years.	1
Two or more in last 10 years.	2
One in last two years.	3
One within last 12 months	4
	5

Major line replacement history due to defects

No replacements since start-up.	0
One replacement section within last 10 years.	1
One replacement section within last 5 years.	2
More than one replacement section within last 5 years.	3
One or more replacement sections within last 12 months.	4
	5

Pressure test history

Successful test within last 2 years.	0
Successful test within last 5 years.	1
Successful test within last 10 years.	2
Successful test within last 20 years.	3
No test or records of test or test > 20 years ago.	4
	5

Design engineering/construction records

Complete as-built drawings, material certificates and specifications.	0
Mostly complete as-built drawings, material certificates and specifications.	1
Complete as-built drawings, some certificates and specifications.	2
Some as-built drawings, certificates and specifications.	3
Incomplete.	4
	5

Q's and Select Box Options**Actual Values****MOP stress/SMYS**

< 20%.	0
> 20% but < 40%.	1
> 40% but < 50%.	2
> 50% but < 60%	3
> 60% but < 72%	4
	5

Anchor patterns near pipeline

Onshore - N/A.	0
Anchoring locations specied and strictly enforced.	1
Anchoring locations specied and usually enforced.	2
Anchoring locations generally specified.	3
Anchoring at any location.	4
	5

Pressure cycles

No cycles, steady state flow.	0
< 7 cycles per week, small pressure differentials.	1
One or two cycles per day, large pressure differentials.	2
Frequent daily cycles, small pressure differentials.	3
Frequent daily cycles, large pressure differentials.	4
	5

Pig run made for deformation anomaly detection

Made within last 12 months.	0
Made within last 3 years.	1
Made within last 5 years.	2
Made within last 10 years.	3
> 10 years or never made.	4
	5

Pipe Segment: Hattiesburg to DemopolisSegment 1
367.39-371.63 4.24 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 10	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 40% but < 50%.	3
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small bou	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specific	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, large pressure differentials.	5
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	53
Defects Average	3.31
Defects Weighting Constant	0.348
Defects Threat Score	1.15
Defects Percentage	66%

Pipe Segment: Hattiesburg to Demopolis Segment 2
378.49-381.19 2.69 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 100%	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small boulders.	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specifications.	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, large pressure differentials.	5
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	52
Defects Average	3.25
Defects Weighting Constant	0.348
Defects Threat Score	1.13
Defects Percentage	65%

Pipe Segment: Hattiesburg to Demopolis Segment 3
387.48-390.77 3.29 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 100%	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small boulders.	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specifications.	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, large pressure differentials.	5
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	52
Defects Average	3.25
Defects Weighting Constant	0.348
Defects Threat Score	1.13
Defects Percentage	65%

Pipe Segment: Hattiesburg to Demopolis Segment 4
401.17-403.75 2.58 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 100%	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small bould	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specifica	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, small pressure differentials.	4
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	51
Defects Average	3.19
Defects Weighting Constant	0.348
Defects Threat Score	1.11
Defects Percentage	64%

Pipe Segment: Hattiesburg to Demopolis Segment 5
411.64-422.33 10.58 Miles

Defects

1	Welding records	Strict welder qualification, mostly complete records, < 100%	3
2	Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3	Pipe manufacturer	Known, quality sometimes questionable.	3
4	Pipeline age	>30 years or unknown.	5
5	Normal operating pressure stress/SMYS	< 20%.	1
6	Un-repaired defects	None.	1
7	Pipe information	No specs or mill certificates but manufacturer known.	4
8	Backfill	Good quality with small rocks, no large rocks or small boulders	3
9	History of defects related leaks/spills	None in last 10 years.	1
10	Major line replacement history due to defects	No replacements since start-up.	1
11	Pressure test history	No test or records of test or test > 20 years ago.	5
12	Design engineering/construction records	Complete as-built drawings, some certificates and specifications	3
13	MOP stress/SMYS	> 50% but < 72%	5
14	Anchor patterns near pipeline	Onshore - N/A.	1
15	Pressure cycles	Frequent daily cycles, small pressure differentials.	4
16	Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	50
Defects Average	3.13
Defects Weighting Constant	0.348
Defects Threat Score	1.09
Defects Percentage	63%

Pipe Segment: Hattiesburg to Demopolis Segment 6
443.56-443.90 .34 Miles

Defects

1	Welding records	Strict welder qualification, mostly complete records, < 100%	3
2	Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3	Pipe manufacturer	Known, quality sometimes questionable.	3
4	Pipeline age	>30 years or unknown.	5
5	Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6	Un-repaired defects	None.	1
7	Pipe information	No specs or mill certificates but manufacturer known.	4
8	Backfill	Good quality with small rocks, no large rocks or small boulders.	3
9	History of defects related leaks/spills	None in last 10 years.	1
10	Major line replacement history due to defects	No replacements since start-up.	1
11	Pressure test history	No test or records of test or test > 20 years ago.	5
12	Design engineering/construction records	Complete as-built drawings, some certificates and specifications.	3
13	MOP stress/SMYS	> 60% but < 72%	5
14	Anchor patterns near pipeline	Onshore - N/A.	1
15	Pressure cycles	Frequent daily cycles, large pressure differentials.	5
16	Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	52
Defects Average	3.25
Defects Weighting Constant	0.348
Defects Threat Score	1.13
Defects Percentage	65%

Pipe Segment: Hattiesburg to Demopolis Segment 7

448.9-459.87 10.97 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 100%	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small boulders.	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specifications.	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, large pressure differentials.	5
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	52
Defects Average	3.25
Defects Weighting Constant	0.348
Defects Threat Score	1.13
Defects Percentage	65%

Pipe Segment: Hattiesburg to Demopolis Segment 8
469.5-471.78 2.28 Miles

Defects

1 Welding records	Strict welder qualification, mostly complete records, < 100%	3
2 Pipe type	Pre 1970 ERW, lap weld, furnace butt weld or unknown.	5
3 Pipe manufacturer	Known, quality sometimes questionable.	3
4 Pipeline age	>30 years or unknown.	5
5 Normal operating pressure stress/SMYS	> 20% but < 40%.	2
6 Un-repaired defects	None.	1
7 Pipe information	No specs or mill certificates but manufacturer known.	4
8 Backfill	Good quality with small rocks, no large rocks or small boulders.	3
9 History of defects related leaks/spills	None in last 10 years.	1
10 Major line replacement history due to defects	No replacements since start-up.	1
11 Pressure test history	No test or records of test or test > 20 years ago.	5
12 Design engineering/construction records	Complete as-built drawings, some certificates and specifications.	3
13 MOP stress/SMYS	> 60% but < 72%	5
14 Anchor patterns near pipeline	Onshore - N/A.	1
15 Pressure cycles	Frequent daily cycles, small pressure differentials.	4
16 Pig run made for deformation anomaly detection	> 10 years or never made.	5

Defects Total	51
Defects Average	3.19
Defects Weighting Constant	0.348
Defects Threat Score	1.11
Defects Percentage	64%

Pipe Segment: Hattiesburg to Demopolis Segment 9
482.4-487.84 5.44 Miles

Scoring Item	Score	Comments
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Threats

3rd Party Intervention

1 Pipeline in shared ROW	None.	▼	1
2 MOP stress/SMYS	> 60% but < 72%.	▼	5
3 One call activity requiring Company response	10 to 25 call per month.	▼	2
4 History of 3rd party intervention related leaks/spills	None in last 10 years.	▼	1
5 Patrol frequency	Once per week.	▼	2
6 Depth of cover/sand or grout bag cover	Less than 3 feet.	▼	4
7 Pipeline size	10.75-inch through 14-inch OD.	▼	3
8 Construction, development, dredging or farm activity on or near pipeline	Constantly/year round.	▼	5
9 ROW maintenance	Annual or as required (urban locations).	▼	3
10 Pipe manufacturer	Known, quality sometimes questionable.	▼	3
11 Normal operating pressure stress/SMYS	< 20%.	▼	1
12 Pipeline signs and markers	Installed with annual inspection/repair/as required.	▼	5
13 Foreign pipeline crossings	More than twenty.	▼	5
14 Public awareness	Annual mailings or meetings.	▼	2
15 Operator present during 3rd party excavation	Never miss or N/A.	▼	1
16 Pipeline age	> 30 years or unknown.	▼	5
17 Security for above ground facilities	Fenced, valves locked and chained.	▼	2

TPI Total	50
TPI Average	2.94
TPI Weighting Constant	0.183
TPI Threat Score	0.54
TPI Percentage	59%